

I. List 3-5 Student Learning Outcomes for students enrolled in your program.

These should be broad overarching learning goals. They are bigger than objectives.

- 1) Students will have firm foundations in the fundamentals, major concepts, and application of chemical and scientific theories.
 - 2) Will apply the principles and methods of chemistry to the description of chemical systems and to the solution of chemical problems.
 - 3) Will develop the ability to employ critical thinking, analytical reasoning and hypothesis-driven methods of scientific inquiry to solving problems.
 - 4) Will have a working knowledge of basic research methodologies, data analysis and interpretation.
 - 5) Will be proficient in basic laboratory skills, be able to perform common laboratory techniques and use these skills and techniques to carry out, record, process, analyze and critically evaluate the results of chemical experiments performed in a modern laboratory.
 - 6) Articulate the principals and methods of chemistry through effective written and oral communication skills, focusing on the ability to share the results of their work to chemists and non-chemists.
 - 7) Demonstrate ability to work effectively independently and within a group/team on various projects.
 - 8) Understand the ethical, historical and especially environmental and social issues facing chemists.
- Have a basic chemical and scientific literacy to be able to make informed, rational and ethical decisions as a world citizen.

II. Align the Program Level SLOs with the College Goals.

Briefly discuss how your program meets the goals of the college.

Goal 1: We maintain a high level of rigor, access and support to our students, offer a wide variety of courses in both day and evening and provide foundations for both transfer, pre-professional training and general education. By meeting the SLOs enumerated above we maintain educational excellence for our students so that they can achieve there academic goals.

Goal 2: Students will work both independently and in groups on different project with support from the instructor. We will provide adequate classrooms and safe laboratories which helps to maintain the supportive learning environment.

Goal 6: We will not only encourage efficient data collection and analysis we will also collect data on student access, success and impressions, praise and criticism to help inform on institutional and instructional performance.

II. Assess the student success in your program.

How do you know students learned the core SLOs by the completion of curriculum/program. Include data to support these findings.

Development departmental concept rubrics and a library of questions both to assess students ability to solve problems and to make sure the same course taught by different instructors is covering the same fundamental material.

Exam, homework problems and in class group projects will continually be assess for student mastery of the subject.

Lab reports which describe experimental design and set up, encompass the data collection and analysis, and effective written communication of results will be evaluated.

Data on retention, success and persistence through the chemistry sequence will be analyzed and adjustment made as indicted from the data.

IV. Document student success/achievement in the program.

Possible documentation materials might include Degrees, Awards, Transfer, Portfolios, Capstone Assignments, Success in Job Placement, etc.)

Our chemistry retention and success rates that are on par with those across the state of California.

Also at the end of our general chemistry and organic chemistry series we give the American Chemical Society standardized examinations and have realized very favorable results year after year. In the general chemistry sequence we have a nearly perfect pass rate (pass being indicated as above the national average-50th percentile). This holds true in the organic chemistry sequence. In fact for the past three years only 3 out of nearly 60 students have scored lower than the national average, and 36 of our students have score over the 85th percentile. This means that approximately 60% of our students were in the top 15% in the nation on the national organic chemistry exam.

V. Note areas for future improvement.

Address needs of program like curricular innovation, resource allocation, upgrading facilities , technology, unit allocation, staffing, etc.

We would like to have greater outreach and counseling when students first arrive at CoM and try to encourage them to pursue an AS degree in chemistry.
We also need to continue to improve our laboratory supply and equipment acquisition with a rational, realistic and reliable funding source.
Finally, we need to have hire at least one new full time faculty member (we really need two) and a laboratory technician. With our enrollment growth, the high caliber of students, the expectations we place on ourselves as well as those placed on us by our students and community, the part time full time instructor ratio is unsustainable for much longer.

College of Marin Program Review Student Learning Outcomes • SL I v.1 February 2008